

ATOMIC ENERGY COUNCIL



REGULATION OF NUCLEAR POWER



Protecting the public and the environment

MANDATE

"To regulate peaceful applications of ionizing radiation in Uganda for the protection and safety of the public and the environment from the dangers resulting from ionizing radiation".

STRATEGIC AREAS OF FOCUS

- Development of Regulations, Safety standards & Guides
- Developing capacity and competence in regulation of nuclear power programs
- Ensure that licensees operate in accordance with the relevant AEC laws, regulations, license requirements, and standards.

PRODUCTION OF ELECTRICITY FROM NPP

Nuclear power plants (NPPs) are fueled mostly with uranium - 235 which undergoes a sustained fission chain reaction, generating heat and giving rise to radioactive fission products, and transuranic elements including plutonium.

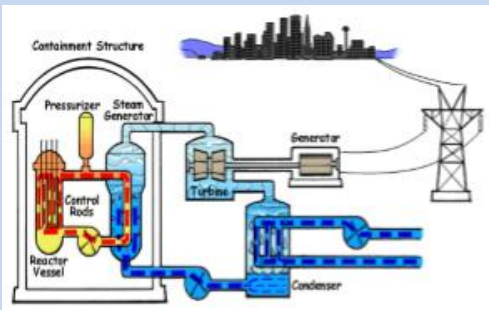


Fig1: Schematic diagram of a nuclear power plant

THE NUCLEAR FUEL CYCLE

This is a series of industrial processes which involve the production of electricity from Uranium in nuclear power reactors. The AEC is mandated to carrying out regulatory oversight on the entire Nuclear fuel Cycle (Uranium mining, milling, enrichment, fuel fabrication, reprocessing, radioactive waste management and disposal)

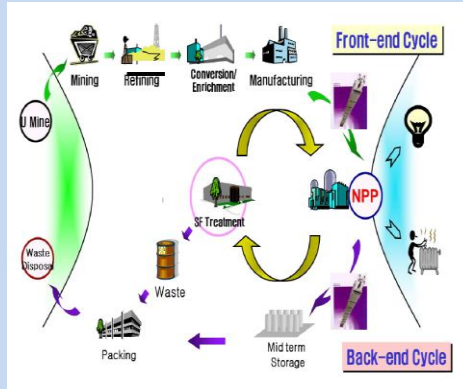


Fig 2: The Nuclear Fuel Cycle.

BENEFITS OF NUCLEAR POWER PLANTS

- less fuel offers more energy
- Less use of fossil fuels hence lowering greenhouse gas emissions
- Improves on energy security and reliability
- Employment opportunities
- Technology advancements
- Improved socio-economic welfare
- General regional development
- Infrastructure developments; Schools, roads, railways, etc.

DISADVANTAGES OF NUCLEAR POWER PLANTS

- Radioactive waste management
- Large capital investments

RISKS ASSOCIATED WITH NUCLEAR POWER PLANTS

- Nuclear accidents
- Nuclear proliferations

ROLES OF AEC IN REGULATION OF NPPS

- Reactor/plant safety – Ensuring accidents are avoided and reducing the consequences of accidents if they occur.
- Radiation safety – Ensuring workers and the public are protected from unnecessary radiation exposure.
- Nuclear Security – Ensuring the plants are protected against sabotage or other security threats.
- Nuclear Safeguards – Ensuring proper accountability of nuclear materials such that they are not diverted for malicious use.

CROSS-CUTTING AREAS

The following issues have to be addressed as they can affect the general safety at a NPP.

- Human performance
- Problem identification and resolution
- Safety culture

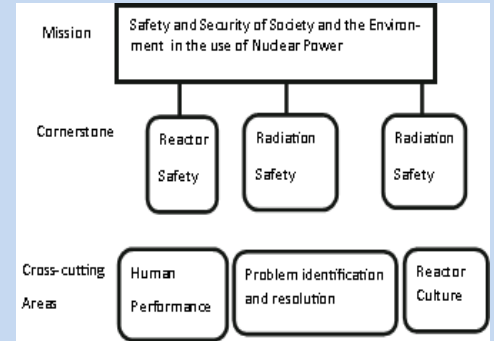


Fig 3: Reactor Oversight Framework

REGULATED ACTIVITIES IN NUCLEAR POWER PROGRAMS

- Mining and milling of uranium
- Transportation of nuclear materials
- Enrichment of uranium
- Fabrication of nuclear fuel materials
- Operation of nuclear power plant
- Radioactive and spent fuel management
- Reprocessing of spent nuclear fuel
- Decommissioning of nuclear installations

LICENSING PROCESS FOR NPPS

Licensing of nuclear installations (NPPs) is on a phased approach depending on the life cycle of operation of the nuclear power plant. They include;

- Site permits (Permit to prepare a site)
- Permit for approval of design
- Construction Permit
- License to operate
- License to decommission

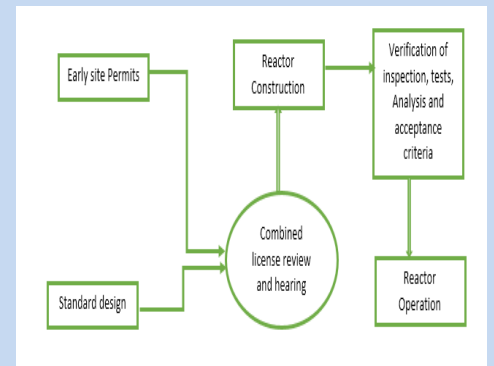


Fig 4: Reactor Licensing Process

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